WHAT IS CLAIMED IS:

1. A coding apparatus for coding first pictures, that are set at a predetermined interval, to be used as reference pictures for inter-picture prediction of an incoming moving picture and coding second pictures different from the first pictures, the coding apparatus having a variable picture rate coding apparatus comprising:

a first encoder to encode the first pictures by intra-picture coding or unidirectional inter-picture predictive coding, thus obtaining a first bitstream;

a picture rate setter to set a coding picture rate in accordance with motion activity of the incoming moving picture;

a second encoder to encode pictures that have remained after decimation of the second pictures in accordance with the picture rate by bidirectional inter-picture predictive coding using the first pictures or locally-decoded pictures of the first pictures as the reference pictures, thus obtaining a second bitstream; and

a multiplexer to multiplexes the first and the second bitstreams and data indicating the picture rate.

2. A coding apparatus for coding first pictures, that are set at a predetermined interval, to be used as reference pictures for inter-picture prediction of an incoming moving picture and coding second pictures different from the first pictures, the coding apparatus having a variable picture rate coding apparatus comprising:

a first encoder to encode the first pictures by intra-picture coding or unidirectional inter-picture predictive coding, thus obtaining a first bitstream;

a picture rate setter to set a coding picture rate in accordance with motion activity of the incoming moving picture;

a second encoder to encode the second pictures by bidirectional inter-picture predictive coding using the first pictures or locally-decoded pictures of the first pictures as the reference pictures, to obtain a second bitstream, the second

bitstream being decimated in accordance with the picture rate, thus obtaining a third bitstream; and

a multiplexer to multiplexes the first and the third bitstreams and data indicating the picture rate.

3. A decoding apparatus for decoding a multiplexed bitstream to which a first bitstream of coded first pictures that are set at a predetermined interval, to be used as reference pictures for inter-picture prediction of a moving picture to be coded, a second bitstream of coded second pictures different from the first pictures, coded by inter-picture prediction and decimated in accordance with a coding picture rate and data indicating the picture rate have been multiplexed, the decoding apparatus having a variable picture rate decoding apparatus comprising:

a decoder to decode the multiplexed bitstream, thus reproducing moving picture;

an interpolation rate setter to extract the picture rate data from the multiplexed bitstream for judging a degree of the decimation of the second pictures, thus setting an interpolation rate; and

a reproducer to interpolate the reproduced moving picture in accordance with the interpolation rate, thus outputting a moving picture at an adjusted rate.

4. A variable picture rate coding method in a coding method of coding first pictures, that are set at a predetermined interval, to be used as reference pictures for inter-picture prediction of an incoming moving picture and coding second pictures different from the first pictures, comprising the steps of:

encoding the first pictures by intra-picture coding or unidirectional inter-picture predictive coding, thus obtaining a first bitstream;

setting a coding picture rate in accordance with motion activity of the incoming moving picture;

encoding pictures that have remained after decimation of the second pictures in accordance with the picture rate by bidirectional inter-picture predictive coding using the first

pictures or locally-decoded pictures of the first pictures as the reference pictures, thus obtaining a second bitstream; and

multiplexing the first and the second bitstreams and data indicating the picture rate.

5. A coding method of coding first pictures, that are set at a predetermined interval, to be used as reference pictures for inter-picture prediction of an incoming moving picture and coding second pictures different from the first pictures, comprising the steps of:

encoding the first pictures by intra-picture coding or unidirectional inter-picture predictive coding, thus obtaining a first bitstream;

setting a coding picture rate in accordance with motion activity of the incoming moving picture;

encoding the second pictures by bidirectional inter-picture predictive coding using the first pictures or locally-decoded pictures of the first pictures as the reference pictures, to obtain a second bitstream, the second bitstream being decimated in accordance with the picture rate, thus obtaining a third bitstream; and

multiplexing the first and the third bitstreams and data indicating the picture rate.

6. A decoding method of decoding a multiplexed bitstream to which a first bitstream of coded first pictures that are set at a predetermined interval, to be used as reference pictures for inter-picture prediction of a moving picture to be coded, a second bitstream of coded second pictures different from the first pictures, coded by inter-picture prediction and decimated in accordance with a coding picture rate and
data indicating the picture rate have been multiplexed, comprising the steps of:

decoding the multiplexed bitstream, thus reproducing moving picture;

extracting the picture rate data from the multiplexed bitstream for judging a degree of the decimation of the second

pictures, thus setting an interpolation rate; and

interpolating the reproduced moving-picture in accordance with the interpolation rate, thus outputting a moving picture at an adjusted rate.

7. A variable picture rate coding apparatus comprising:

a picture rate setter to set a coding picture rate for each picture portion of a progressive moving picture incoming at a given picture rate, in accordance with motion activity of the incoming progressive moving picture or a coding parameter for coding the incoming moving picture;

a generator to decimate scanning lines of the incoming moving picture when the set picture rate and the given picture rate are equal to each other, thus generating an interlaced moving picture whereas decimate frames of the incoming moving picture in accordance with the set picture rate when the set picture rate is lower than the given picture rate, thus generating a progressive moving picture;

an encoder to encode the interlace moving picture by interlace coding when the set picture rate and the given picture rate are equal to each other whereas encode the progressive moving picture by progressive scanning when the set picture rate is lower than the given picture rate, thus obtaining a moving-picture bitstream; and

a multiplexer to multiplex data indicating the set picture rate and the moving-picture bitstream.

8. A decoding apparatus for reproducing a progressive moving picture at a desired picture rate from a moving-picture bitstream, the decoding apparatus having a variable picture rate decoding apparatus comprising:

a picture rate setter to obtain date indicating coding picture rate from the moving-picture bitstream, thus setting a decoding picture rate for each picture portion of the moving-picture bitstream;

a decoder to decode the moving-picture bitstream under interlaced scanning when the set picture rate and the desired

picture rate are equal to each other, thus obtaining a first decoded moving picture whereas decode the moving-picture bitstream under progressive scanning when the set picture rate is lower than the desired picture rate, thus obtaining a second decoded moving picture; and

an interpolator to interpolate scanning lines to the first decoded moving picture when the set picture rate and the desired picture rate are equal to each other whereas interpolate frames to the second decoded moving picture when the set picture rate is lower than the desired picture rate, thus reproducing a progressive moving picture at the desired picture rate.

9. A variable picture rate coding apparatus comprising:

a picture rate setter to set a coding picture rate for each picture portion of an interlaced moving picture incoming at a given picture rate in accordance with motion activity of the incoming interlaced moving picture or a coding parameter for coding the incoming moving picture;

a scanning-type converter to convert the incoming interlaced moving picture to a progressive moving picture;

a picture decimator to decimate frames of the progressive moving picture in accordance with the set picture rate when the set picture rate is lower than the given picture rate, thus obtaining a decimated moving picture;

an encoder to encode the incoming interlaced moving picture under interlaced scanning when the set picture rate is equal to the given picture rate whereas encode the decimated moving picture when the set picture rate is lower than the given picture rate, thus obtaining a moving-picture bitstream; and

a multiplexer to multiplex data indicating the set picture rate and the moving-picture bitstream.

10. A decoding apparatus for reproducing an interlaced moving picture at a desired picture rate from a moving-picture bitstream, the decoding apparatus having a variable picture rate decoding apparatus comprising:

a picture rate setter to obtain date indicating coding

picture rate from the moving-picture bitstream, thus setting a decoding picture rate for each picture portion of the moving-picture bitstream;

a decoder to decode the moving-picture bitstream under interlaced scanning when the set picture rate and the desired picture rate are equal to each other, thus obtaining a first decoded moving picture whereas decode the moving-picture bitstream under progressive scanning when the set picture rate is lower than the desired picture rate, thus obtaining a second decoded moving picture; and

output means for outputting the first decoded moving picture when the set picture rate and the desired picture rate are equal to each other whereas obtain a plurality of fields of an interlaced moving picture from the second decoded moving picture when the set picture rate is lower than the desired picture rate, to output the interlaced moving-picture at the desired picture rate.

11. A variable picture rate coding apparatus comprising:

a detector to detect motion activity of a moving picture incoming at a given picture rate;

a picture rate setter to set a coding picture rate that is high for a detected large motion activity of the incoming moving picture whereas low for a detected low motion activity of the incoming moving picture;

a generator to decimate pictures from the incoming moving picture in accordance with the set picture rate when the set picture rate is lower than the given picture rate, thus obtaining a moving picture at a variable picture rate;

an encoder to encode the moving picture at the variable picture rate, thus obtaining a moving-picture bitstream; and

a multiplexer to multiplex data indicating the set picture rate and the moving-picture bitstream.

12. A variable picture rate coding method comprising the steps of:

setting a coding picture rate for each picture portion of

a progressive moving picture incoming at a given picture rate in accordance with motion activity of the incoming progressive moving picture or a coding parameter for coding the incoming moving picture;

decimating scanning lines of the incoming moving picture when the set picture rate and the given picture rate are equal to each other, thus generating an interlaced moving picture whereas decimating frames of the incoming moving picture in accordance with the set picture rate when the set picture rate is lower than the given picture rate, thus generating a progressive moving picture;

encoding the interlace moving picture by interlace coding when the set picture rate and the given picture rate are equal to each other whereas encoding the progressive moving picture by progressive coding when the set picture rate is lower than the given picture rate, thus obtaining a moving-picture bitstream; and

multiplexing data indicating the set picture rate and the moving-picture bitstream.

13. A variable picture rate decoding method in a decoding method of reproducing a progressive moving picture at a desired picture rate from a moving-picture bitstream, comprising the steps of:

obtaining date indicating a coding picture rate from the moving-picture bitstream, thus setting a decoding picture rate for each picture portion of the moving-picture bitstream;

decoding the moving-picture bitstream under interlaced scanning when the set picture rate and the desired picture rate are equal to each other, thus obtaining a first decoded moving picture whereas decoding the moving-picture bitstream under progressive scanning when the set picture rate is lower than the desired picture rate, thus obtaining a second decoded moving picture; and

interpolating scanning lines to the first decoded moving picture when the set picture rate and the desired picture rate are equal to each other whereas interpolating frames to the second decoded moving picture when the set picture rate is lower than

the desired picture rate, thus reproducing a progressive moving picture at the desired picture rate.

14. A variable picture rate coding method comprising the steps of:

setting a coding picture rate for each picture portion of an interlaced moving picture incoming at a given picture rate in accordance with motion activity of the incoming interlaced moving picture or a coding parameter for coding the incoming moving picture;

converting the incoming interlaced moving picture to a progressive moving picture:

decimating frames of the progressive moving picture in accordance with the set picture rate when the set picture rate is lower than the given picture rate, thus obtaining a decimated moving picture;

encoding the incoming interlaced moving picture under interlaced scanning when the set picture rate is equal to the given picture rate whereas encode the decimated moving picture when the set picture rate is lower than the given picture rate, thus obtaining a moving-picture bitstream; and

multiplexing the set picture rate and the moving-picture bitstream.

15. A variable picture rate decoding method in a decoding method of reproducing an interlaced moving picture at a desired picture rate from a moving-picture bitstream, comprising the steps of:

obtaining date indicating a coding picture rate from the moving-picture bitstream, thus setting a decoding picture rate for each picture portion of the moving-picture bitstream;

decoding the moving-picture bitstream under interlaced scanning when the set picture rate and the desired picture rate are equal to each other, thus obtaining a first decoded moving picture whereas decoding the moving-picture bitstream under progressive scanning when the set picture rate is lower than the desired picture rate, thus obtaining a second decoded moving picture; and

outputting the first decoded moving picture when the set picture rate and the desired picture rate are equal to each other whereas obtaining a plurality of fields of an interlaced moving picture from the second decoded moving picture when the set picture rate is lower than the desired picture rate, to output the interlaced moving-picture at the desired picture rate.

16. A variable picture rate coding method comprising the steps of:

detecting motion activity of a moving picture incoming at a given picture rate;

setting a coding picture rate that is high for a detected large motion activity of the incoming moving picture whereas low for a detected low motion activity of the incoming moving picture;

decimating pictures from the incoming moving picture in accordance with the set picture rate when the set picture rate is lower than the given picture rate, thus obtaining a moving picture at a variable picture;

encoding the moving picture at the variable picture rate, thus obtaining a moving-picture bitstream; and

multiplexing data indicating the set picture rate and the moving-picture bitstream.

17. A moving-picture scanning-type conversion apparatus comprising:

a scanning-type setter to set a scanning type for each picture portion of an interlaced moving picture incoming at a given picture rate, in accordance with motion activity of the incoming moving picture;

a converter to convert the incoming interlaced moving picture into a progressive moving picture at a picture rate that is half the given picture rate; and

a switch to switch the incoming interlaced moving picture and the progressive moving picture for each picture portion in accordance with the set scanning type.

18. A moving-picture scanning-type conversion apparatus

comprising:

a scanning-type setter to set a scanning type for each picture portion of a progressive moving picture incoming at a given picture rate, in accordance with motion activity of the incoming moving picture;

a scanning line decimator to decimate scanning lines from the incoming progressive moving picture, thus obtaining an interlaced moving picture at the give picture rate;

a frame decimator to decimate frames from the incoming progressive moving picture, thus obtaining a progressive moving picture at a picture rate that is half the given picture rate; and

a switch to switch the obtained interlaced moving picture and the obtained progressive moving picture in accordance with the set scanning type.

19. A moving-picture coding apparatus for coding a moving picture incoming at a given picture rate comprising:

a scanning-type setter to set a coding scanning type for the incoming moving picture in accordance with motion activity of the incoming moving picture;

an encoder to apply a first coding processing to the incoming moving picture when the set coding scanning type is interlaced scanning, the first coding processing being applied to interlaced moving picture at the given picture rate whereas apply a second coding processing to the incoming moving picture when the set coding scanning type is progressive scanning, the second coding processing being applied to progressive moving picture at a picture rate half the given picture rate, thus obtaining a moving-picture bitstream; and

a multiplexer to multiplex data indicating the set coding scanning type and the moving-picture bitstream.

20. A moving-picture scanning-type conversion apparatus comprising:

a scanning line interpolator to generate scanning lines from an incoming first interlaced moving picture, the scanning

lines corresponding to scanning lines that have been decimated due to interlaced scanning, thus obtaining a second interlaced moving picture that is delayed by one field to the first interlaced moving picture; and

a generator to output the first and the second interlaced moving pictures alternately for each field, thus obtaining a progressive moving picture at a picture rate half a picture rate of the first interlaced moving picture.

21. A moving-picture scanning-type conversion method comprising the steps of:

setting a scanning type for each picture portion of an interlaced moving picture incoming at a given picture rate, in accordance with motion activity of the incoming moving picture;

converting the incoming interlaced moving picture into a progressive moving picture at a picture rate that is half the given picture rate; and

switching the incoming interlaced moving picture and the progressive moving picture for each picture portion in accordance with the set scanning type.

22. A moving-picture scanning-type conversion method comprising the steps of:

setting a scanning type for each picture portion of a progressive moving picture incoming at a given picture rate, in accordance with motion activity of the incoming moving picture;

decimating scanning lines from the incoming progressive moving picture, thus obtaining an interlaced moving picture at the given picture rate;

decimating frames from the incoming progressive moving picture, thus obtaining a progressive moving picture at a picture rate that is half the given picture rate; and

switching the obtained interlaced moving picture and the obtained progressive moving picture in accordance with the set scanning type.

23. A moving-picture coding method for coding a moving picture

incoming at a given picture rate comprising the steps of:

setting a coding scanning type for the incoming moving picture in accordance with motion activity of the incoming moving picture;

applying a first coding processing to the incoming moving picture when the set coding scanning type is interlaced scanning, the first coding processing being applied to interlaced moving picture at the given picture rate whereas applying a second coding processing to the incoming moving picture when the set coding scanning type is progressive scanning, the second coding processing being applied to progressive moving picture at a picture rate half the given picture rate, thus obtaining a moving-picture bitstream; and

multiplexing data indicating the set coding scanning type and the moving-picture bitstream.

24. A moving-picture scanning-type conversion method comprising the steps of:

generating scanning lines from an incoming first interlaced moving picture, the scanning lines corresponding to scanning lines that have been decimated due to interlaced scanning, thus obtaining a second interlaced moving picture that is delayed by one field to the first interlaced moving picture; and

outputting the first and the second interlaced moving pictures alternately for each field, thus obtaining a progressive moving picture at a picture rate half a picture rate of the first interlaced moving picture.